

WHAT IS CLAIMED IS:

1. A semiconductor laser module comprising:  
a semiconductor laser element;  
an electronic cooling element configured to allow  
5 heat from the semiconductor laser element to be  
transmitted thereto;

a heat sink configured to allow the heat which is  
transmitted to the electronic cooling element to be  
released;

10 an optical system configured to conduct a laser  
beam which is emitted from the semiconductor laser  
element to an optical fiber cable; and

a heat resistance section configured to transmit  
the heat of the optical system to the electronic  
15 cooling element, having a heat resistance greater than  
a heat resistance when the heat of the semiconductor  
laser element is transmitted to the electronic cooling  
element.

2. A semiconductor laser module according to  
20 claim 1, wherein said heat resistance section is  
configured to interpose a heat resistance element  
between the optical system and the electronic cooling  
element, the heat resistance element having a heat  
resistance greater than a heat resistance when the heat  
25 of the semiconductor laser element is transmitted to  
the electronic cooling element.

3. A semiconductor laser module according to

claim 1, wherein said heat resistance section includes a heat spreader having a first area configured to allow the heat of the semiconductor laser element to be transmitted thereto and allow that heat to be  
5 transmitted to the electronic cooling element, and a second area configured to allow the heat of the optical system to be transmitted thereto, wherein said heat resistance section is provided by forming a high heat resistance portion between the first area and the  
10 second area at the heat spreader, the high heat resistance portion being formed as a hole.

4. A semiconductor laser module according to claim 1, wherein said heat resistance section includes, as an integral member, a first portion configured to  
15 allow the heat of the semiconductor laser element to be transmitted thereto and allow that heat to be transmitted to the electronic cooling element, a second portion configured to allow the heat of the optical system to be transmitted thereto and a third portion  
20 interposed between the first portion and the second portion and configured to have a heat resistance greater than that of the first portion.

5. A semiconductor laser module according to claim 1, wherein said optical system includes an  
25 optical coupling system configured to optically couple together the semiconductor laser element and optical fiber cable, a holder configured to support the

optical coupling system and transmit heat to the heat resistance section, and a casing configured to support the optical fiber cable and transmit heat to the heat resistance section.

5           6. A semiconductor laser module according to claim 5, wherein the portions of the holder and casing which make contact with the heat resistance section are so formed as to be symmetrical about an optical axis of the optical coupling system and optical fiber cable.

10           7. A semiconductor laser module according to claim 1, further comprising a first heat spreader configured to transmit heat from the electronic cooling element to the heat sink and a second heat spreader configured to transmit heat from the semiconductor  
15 laser element and heat resistance section to the electronic cooling element.

          8. A method for releasing heat from a semiconductor laser module configured to allow heat of  
a semiconductor laser element, as well as heat of  
20 an optical system configured to conduct a laser beam which is emitted from the semiconductor laser element to an optical fiber cable, to be released through an electronic cooling element to a heat sink, comprising:  
detecting a temperature of the semiconductor laser  
25 element;

turning the electronic cooling element ON in  
a state in which the detected temperature of the

semiconductor laser element is higher than a steady-state operation temperature;

at a starting time of carrying electric current to the electronic cooling element, absorbing the heat of the semiconductor laser element into the electronic cooling element in preference to the heat of the optical system; and

driving the semiconductor laser element in a state in which the temperature of the semiconductor laser element reaches the steady-state operation temperature.

9. An image display apparatus comprising:

a semiconductor laser module configured to allow heat of a semiconductor laser element to be released through an electronic cooling element to a heat sink and allow heat of an optical system to be transmitted to the electronic cooling element through a heat resistance section having a heat resistance greater than a heat resistance when the heat of the semiconductor laser element is transmitted to the electronic cooling element, the optical system being configured to allow a laser beam which is emitted from the semiconductor laser element to be conducted to an optical fiber cable;

a modulation section configured to space-modulate a laser beam which is outputted through the optical fiber from the semiconductor laser module on the basis of a video signal; and

a display section configured to projection-display the light output which is obtained from the modulation section onto a screen.

5        10. An image display apparatus according to claim 9, wherein the semiconductor laser module and modulation section are so provided as to correspond to each of R, G, B laser beams and the display section synthesizes outputs from respective modulation sections corresponding to the R, G, B signals and projects  
10       a synthesized output onto the screen.

11. An image display apparatus according to claim 9, wherein the video signal is obtained by demodulating a received TV broadcasting signal.